AMENDMENTS TO THE SPECIFICATION

Replace the paragraphs on page 5, line 3, through page 6, line 3, with the following:

Measuring the temperature of the transducer is relatively simple. Traditionally, thermocouples, thermistors and other classical temperature sensors are used to measure the transducer temperature for control and safety purposes. However, these methods increase the cost of the hand piece, and add additional wires and connections which could potentially reduce the reliability of the ultrasonic surgical system.

SUMMARY OF THE INVENTION

The present invention provides a method of ~~Another way to determine~~determining the transducer temperature ~~is to measure~~by measuring the shunt capacitance of the transducer (C_0), and ~~use~~ using the shunt capacitance~~it~~ to calculate the transducer temperature.

A transducer with or without a blade will always possess non-resonant frequencies at which C_0 of the transducer can be measured. However, the particular non-resonant frequencies will vary depending on which blade is attached and the type of transducer in use. Given a known non-resonant frequency of a blade, the measurement of C_0 is relatively simple and fast to perform. However, if the resonant frequencies of the blade must first be identified and C_0 then measured at non-resonant frequencies, a considerable amount of time and effort will be consumed. In such a case, the determination of C_0 is difficult, because the frequency at which C_0 is measured preferably resides at a non-resonant frequency. Typically, the particular non-resonant frequencies used to measure C_0 are almost always present in the blade. However, if the design of the blade is changed, the detection of these particular non-resonant frequencies is not assured. Accordingly, ~~there is a need for a method for ensuring~~the invention ensures isolation of C_0 from resonances or a nearby resonance to determine the transducer/blade temperature.

~~SUMMARY OF THE INVENTION~~

The invention therefore comprises~~is~~ a method for calculating the capacitance of a transducer (C_0) without knowing the exact resonance frequency of a transducer/blade combination.

The invention also comprises a method for determining the temperature of the transducer without the use of a temperature sensor, or the like. The method of the invention is achieved by sweeping across a broad frequency range which contains resonant and non-resonant frequencies where C_0 can be measured. A pre-defined frequency range is set independently of the resonance frequency of a specific transducer/blade combination. C_0 of the transducer/blade is measured at several different frequencies within the pre-defined frequency range to ensure that invalid C_0 measurements are disregarded, and the temperature of the transducer is calculated based on valid C_0 measurements.